

**30V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

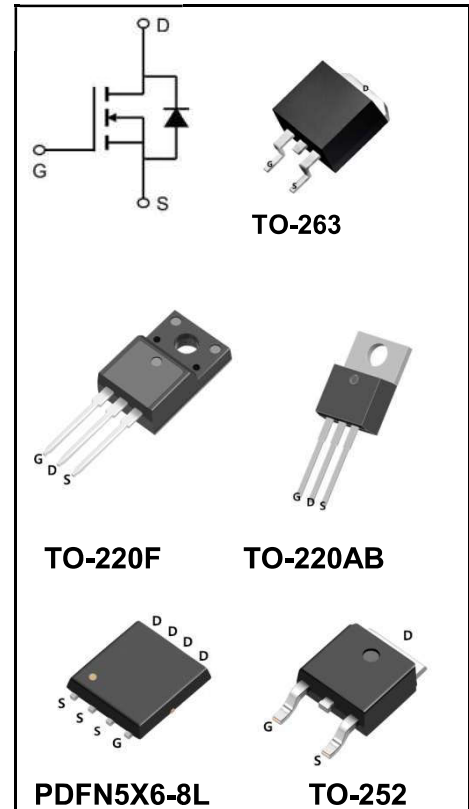
$I_D$		60A
$V_{DSS}$		30V
$R_{DS(on)}$ typ(@ $V_{GS}=10V$ )	TO-252/PDFN	< 8.5m $\Omega$ (Type: 6.5 m $\Omega$ )
	TO-263	< 7.0m $\Omega$ (Type: 9.0 m $\Omega$ )
	TO-220F	< 7.2m $\Omega$ (Type: 9.2 m $\Omega$ )
	TO-220AB	< 7.3m $\Omega$ (Type: 9.2 m $\Omega$ )

**Application**

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply

**Mechanical Data**

- ◆ Case: Molded plastic
- ◆ Mounting Position: Any
- ◆ Molded Plastic: UL Flammability Classification Rating 94V-0
- ◆ Solder bath temperature 275°C maximum, 10s per JESD22-106



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW60N03AT	TO-220AB	YFW 60N03AT XXXXX	50PCS/Tube
YFW60N03AS	TO-263	YFW 60N03AS XXXXX	50PCS/Tube
YFW60N03AS-R	TO-263	YFW 60N03AS XXXXX	800PCS/Tape
YFW60N03AD	TO-252	YFW 60N03AD XXXXX	2500PCS/Tape
YFW60N03NF	PDFN5*6-8L	YFW 60N03NF XXXXX	5000PCS/Tape
YFW60N03AF	TO-220F	YFW 60N03AF XXXXX	50PCS/Tube

**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Symbols	Value		Units
		252/263/220AB/PDFN	220F	
Drain-Source Voltage	$V_{DS}$	30		V
Gate-Source Voltage	$V_{GS}$	±20		V
Continue Drain Current	$I_D$	60		A
Pulsed Drain Current (Note1)	$I_{DM}$	110		A
Power Dissipation	$P_D$	34.7		W
Single Pulse Avalanche Energy (Note1)	$E_{AS}$	57		mJ
Operating Temperature Range	$T_J$	150		°C
Storage Temperature Range	$T_{STG}$	-55 to +150		°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	3.6	7.2	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62		°C/W

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

**Maximum Ratings at Tc=25°C unless otherwise specified**

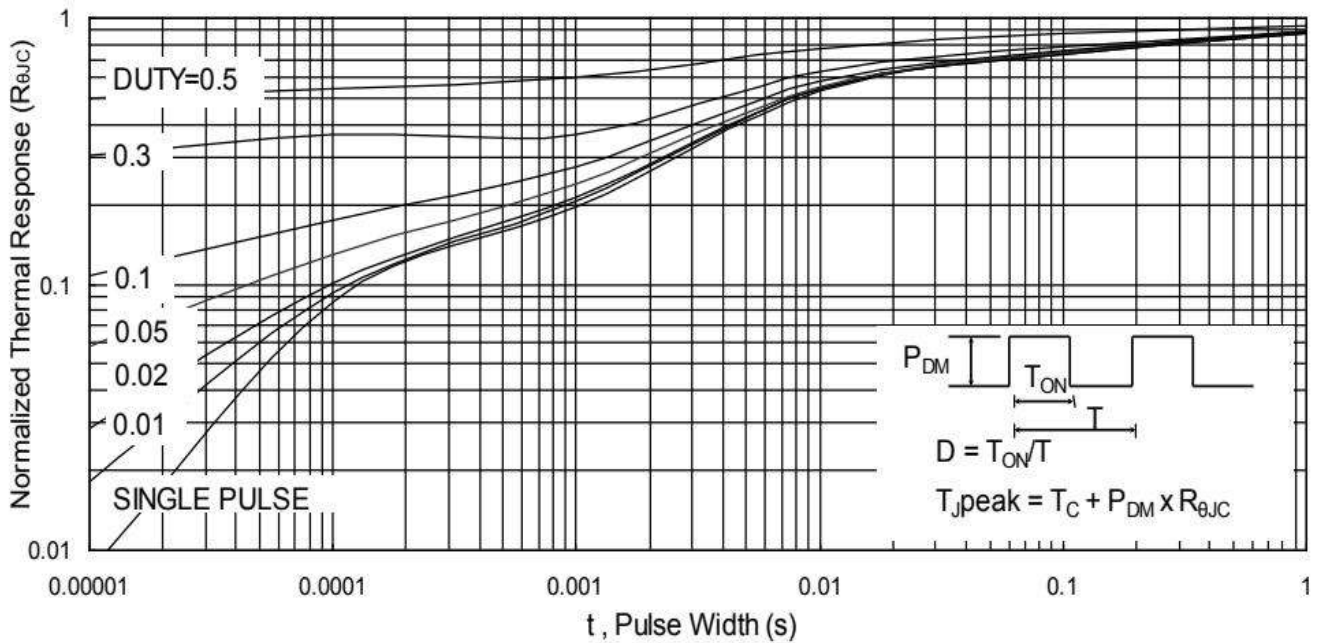
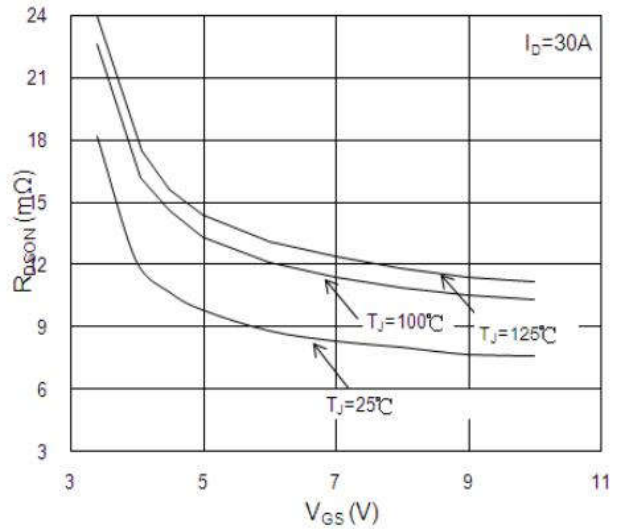
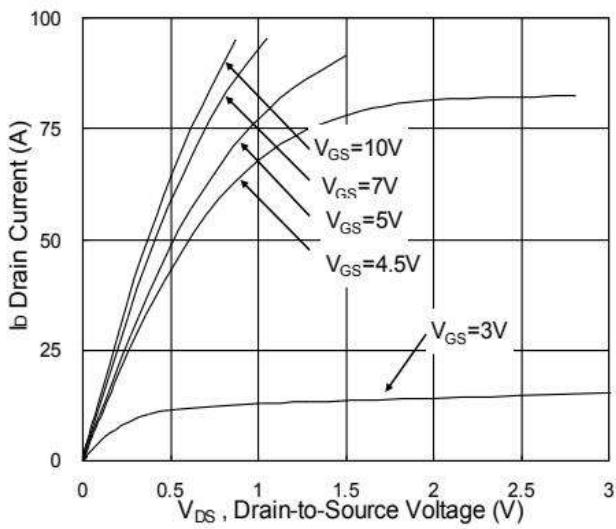
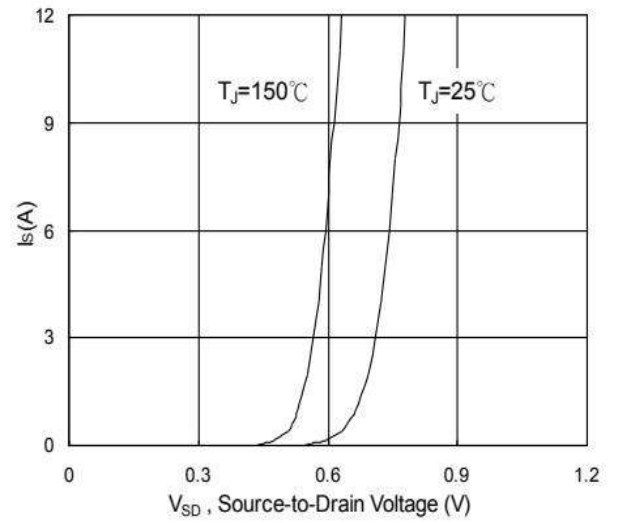
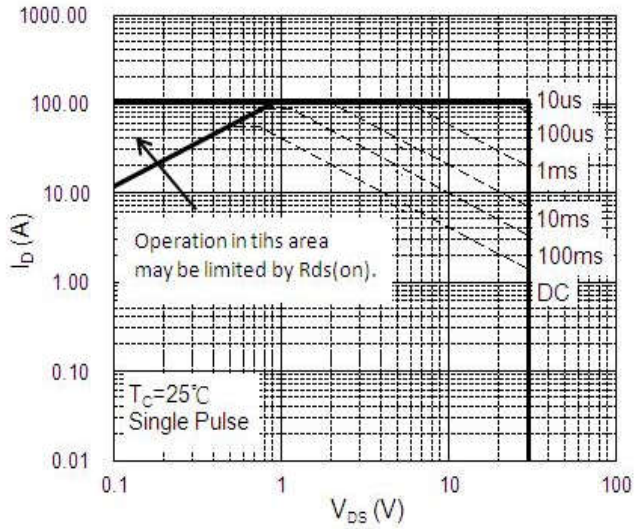
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS} = 0 V, I_D = 250 \mu A$	$BV_{DSS}$	30	-	-	V
Drain-Source Leakage Current	$V_{DS} = 24 V, V_{GS} = 0 V$	$I_{DSS}$	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 20 V, V_{DS} = 0 V$	$I_{GSS}$	-	-	±100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{GS(th)}$	1	-	2.5	V
Drain-Source On-State Resistance	$V_{GS} = 10 V, I_D = 30 A$	TO-252 PDFN	-	6.5	8.5	mΩ
		TO-263	-	7.0	9.0	mΩ
		TO-220F	-	7.2	9.2	mΩ
		TO-220AB	-	7.3	9.2	mΩ
Forward Transconductance	$V_{DS} = 5 V, I_D = 30 A$	$g_{fs}$	-	36	-	S
Input Capacitance	$V_{GS} = 0 V, V_{DS} = 15 V, f = 1 MHz$	$C_{iss}$	-	1314	-	pF
Output Capacitance		$C_{oss}$	-	162	-	
Reverse Transfer Capacitance		$C_{rss}$	-	128	-	
Turn-on Delay Time(Note2)	$V_{DD} = 15 V, V_{GS} = 10 V, R_G = 3.3 \Omega, I_D = 15 A$	$td(ON)$	-	4.5	-	nS
Rise Time(Note2)		$tr$	-	11.8	-	
Turn-Off Delay Time(Note2)		$td(OFF)$	-	25	-	
Fall Time(Note2)		$tf$	-	7	-	
Total Gate Charge(Note2)	$V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 15 A$	$Q_G$	-	13	-	nC
Gate to Source Charge(Note2)		$Q_{GS}$	-	4	-	
Gate to Drain Charge(Note2)		$Q_{GD}$	-	5	-	

**Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Maximun Body-Diode Continuous Current		<b>I<sub>S</sub></b>	-	-	58	<b>A</b>
Maximun Body-Diode Pulsed Current(Note2)		<b>I<sub>SM</sub></b>	-	-	120	<b>A</b>
Drain-Source Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>S</sub> =1A , T <sub>J</sub> =25°C	<b>V<sub>SD</sub></b>	-	-	1.2	<b>V</b>

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

**Ratings and Characteristic Curves**



Package Outline Dimensions Millimeters

**TO-220AB**

	Dim.	Min.	Max.
	A	10.15	10.35
	B	2.65	2.95
	C	3.70	3.90
	D	28.5	29.5
	E	1.30	1.45
	F	6.35	6.55
	G	2.9	3.3
	H	15.0	16.0
	I	0.38	0.42
	J	4.45	4.55
	K	1.25	1.35
	L	Typ 5.08	
	M	Typ 2.54	
	N	3.1	3.3
O	0.76	0.84	
All Dimensions in millimeter			

**TO-220F**

	Dim.	Min.	Max.
	A	9.95	10.25
	B	2.95	3.25
	C	1.25	1.45
	D	12.95	13.25
	E	0.50	0.65
	F	3.1	3.3
	G	1.30	1.45
	H	Typ 2.54	
	I	Typ 5.08	
	J	4.60	4.75
	K	2.50	2.65
	L	6.35	6.55
	M	15.4	16.0
	N	2.75	3.05
O	0.48	0.52	
P	0.76	0.84	
All Dimensions in millimeter			

Package Outline Dimensions Millimeters

**TO-263**

	Dim.	Min.	Max.
	A	10.1	10.2
	B	7.4	7.6
	C	1.3	1.5
	D	0.55	0.75
	E	5.0	6.0
	F	1.4	1.6
	G	0.78	0.86
	H	1.2	1.3
	I	Typ2.54	
	J	8.4	8.6
	K	4.45	4.55
	L	1.25	1.35
	M	0.02	0.1
N	2.4	2.8	
O	0.36	0.40	
All Dimensions in millimeter			

**TO-252**

	Dim.	Min.	Max.
	A	2.1	2.5
	B	0.95	1.55
	C	0.4	0.6
	D	6.4	6.7
	D1	5.1	5.8
	E	5.8	6.4
	E1	Typ 2.3	
	E2	Typ 4.6	
	B1	0.6	0.8
	B2	0.75	0.95
	O	--	0.15
	L1	9.0	11.0
	L2	1.3	1.7
L3	0.70	0.95	
All Dimensions in millimeter			

Package Outline Dimensions Millimeters

PDFN5\*6-8L

	Dim.	Min.	Max.
	A	4.8	5.2
	B	0.25	0.35
	C	1	1.2
	C1	Typ 0.254	
	C2	Typ 0.254	
	E	Typ 1.27	
	L	6	6.3
	L1	5.7	6
	L2	MAX 0.2	
R	Typ 13°		
All Dimensions in millimeter			